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**APRIL 16, 2024**

# Toronto Regional Electricity Planning Discussion

Webinar #1: Demand Forecast

# Agenda

1. Ontario's Electricity Sector and the Role of the IESO
2. Regional Electricity Planning Process
3. Electricity Demand Forecast Assumptions
4. Engagement and Next Steps
5. Discussion



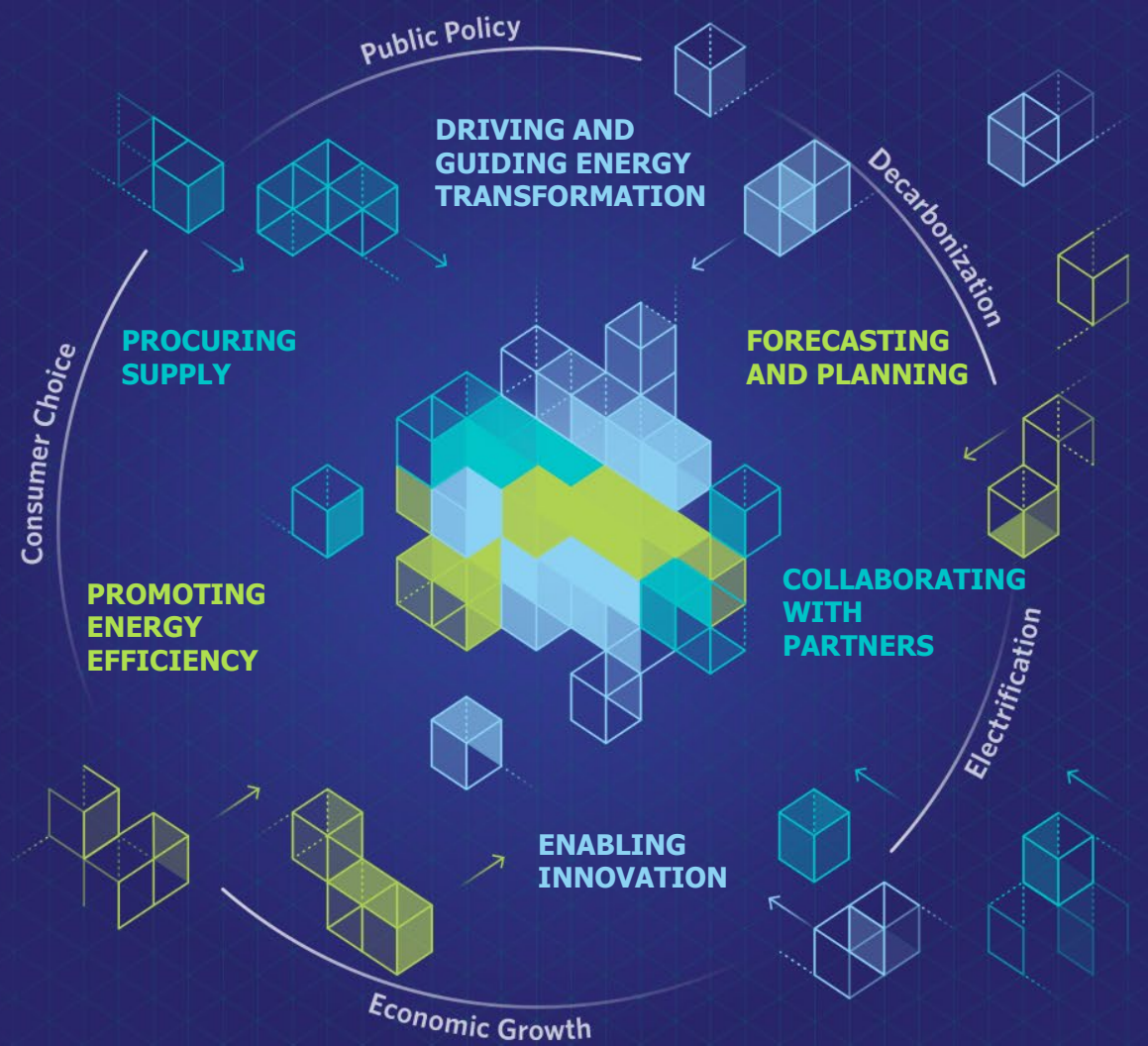
Connecting Today.  
Powering Tomorrow.



We work with:



# A RELIABLE, AFFORDABLE, SUSTAINABLE ELECTRICITY SYSTEM



# Ontario's Changing Electricity Landscape



This is a pivotal point for the electricity system. Ontario is entering a period of need – by 2050, **energy consumption could double**



These needs are being driven by **economic growth, population growth, increased electrification and decarbonization**



This demand growth is happening in the midst of expiring generator contracts, nuclear refurbishments and the elimination of emissions from the grid



To meet the emerging needs, **Ontario will require additional new electricity infrastructure**, including new supply and transmission

# The Path Forward: Planning and Forecasting

**To keep the lights on today, and into the future, the Independent Electricity System Operator:**



**Forecasts** Ontario's energy needs on a day-to-day basis and at the regional and provincial level



**Plans** and coordinates the construction of Ontario's high-voltage transmission lines that transport electricity from suppliers to Ontario's communities, including through the Annual Planning Outlook, regional planning and many others



**Secures** new energy supply in the short, medium and long term in a timely, cost-effective and flexible way



**Designs** key programs and initiatives to address needs at the regional and provincial level



# Regional Electricity Planning Process

# Electricity Planning in Ontario



## Provincial/Bulk System Planning

Addresses provincial electricity system needs and policy directions.



## Regional Planning

Addresses local electricity system needs at the transmission system level.

Underway: Toronto Regional Electricity Plan



## Distribution Planning

Addresses local electricity system needs and priorities at the distribution system level.

Led by local distribution companies.



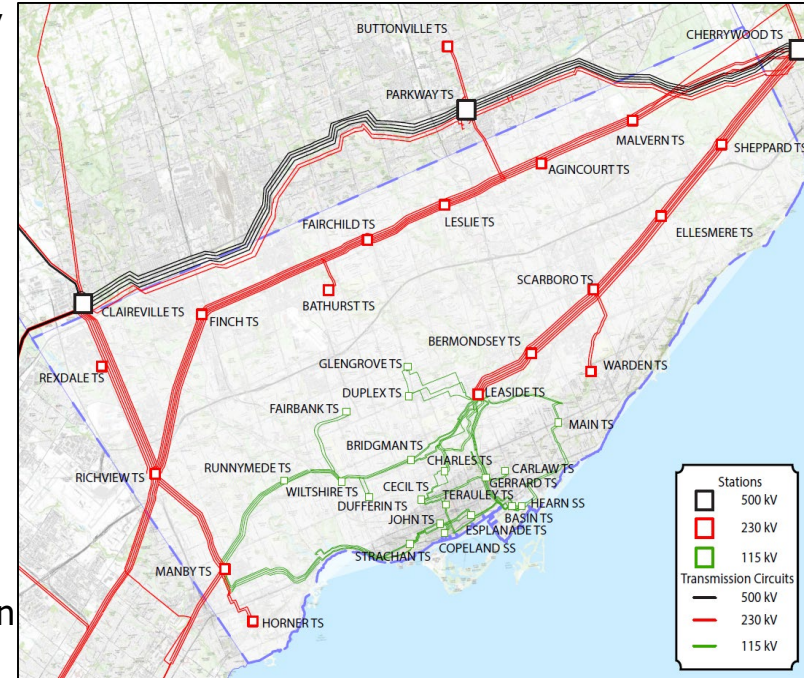
# Engaging to Meet Local Electricity Needs

- There are 21 planning regions in Ontario
  - Based on electricity infrastructure boundaries
- Planning addresses each region's unique needs and characteristics
- Communities play an essential role in the development of an electricity plan – Integrated Regional Resource Plan (IRRP):
  - Help to identify future electricity needs
  - Provide input on a variety of options to meet needs
  - Provide feedback on recommendations



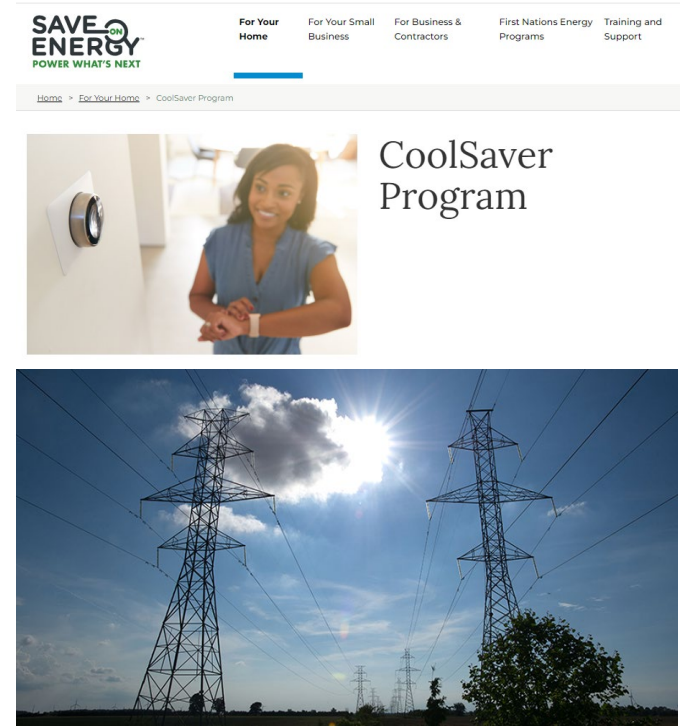
# Toronto Region

- Includes the area within the City of Toronto municipal boundary
- Electricity system consists of 230 kV and 115 kV transmission lines and stations
- The IESO identified the following Indigenous communities that may be potentially impacted or may have an interest based on treaty territory, traditional territory or traditional land uses: Mississaugas of the Credit First Nation, Six Nations of the Grand River, Haudenosaunee Confederacy Chiefs Council/Haudenosaunee Development Institute and Métis Nation of Ontario.



# Current Status of Electricity Planning in Toronto Region

- The IESO has undertaken significant planning work to address multiple needs in the Toronto region, including recommending building new transmission infrastructure, replacing aging infrastructure, and targeted funding for energy efficiency and innovation projects
- The third regional electricity plan, or Integrated Regional Resource Plan (IRRP), for Toronto is underway
- The IRRP will outline electricity needs and recommended solutions to ensure a reliable supply of electricity over the next 20 years



# Updates since previous Regional Plan for Toronto (1)

- The first cycle of regional planning resulted in an IRRP for Central Toronto which was completed in April 2015 with an update being made in February 2017
- The second cycle of regional planning was completed in March 2020 and focused on end of life asset replacement needs, such as transmission lines and equipment reaching the end of their useful life and requiring replacement
- An updated analysis on the Richview to Manby Upgrade (aka Etobicoke Greenway Project) was conducted in 2021; this analysis reaffirmed the findings in the latest IRRP

## Updates since previous Regional Plan for Toronto (2)

- This third cycle of regional planning was initiated in 2022; Hydro One undertook a Needs Assessment, published in December 2022, identifying needs that require further regional coordination
- The IESO's *Pathways to Decarbonization* report was released in December 2022 and laid the foundation to study decarbonization scenarios in regional plans, including in Toronto
- The Ontario government released its *Power Ontario's Growth* report, highlighting the need to act today to ensure growth and electrification needs are met
- Examining options to reduce reliance on Portlands Energy Centre is part of the scope of this regional plan

# 2023-2024 Toronto Regional Planning Timeline



# Toronto Regional Planning Working Group

Team Lead,  
System  
Operator

- Independent Electricity System Operator

Lead  
Transmitter

- Hydro One Networks Inc.  
(Transmission)

Local  
Distribution  
Company

- Toronto Hydro Electric Systems Limited

# Components of an IRRP



## Demand Forecast

How much power is needed over the planning timeframe?

## Needs

What needs are emerging in the region that need to be addressed?

## Potential Solutions

What kinds of solutions can meet the future needs for the region?

## Recommendations

Based on an assessment of potential options, what recommended actions will ensure a reliable and adequate electricity supply for the region over the long-term?





# Electricity Demand Forecast Assumptions

# Local Planning Drivers



Municipal/regional growth plans



Indigenous communities



Climate change action plans



Community energy plans



Business plans of major electricity consumers or large projects



Local Generation/Energy Projects

## Drivers of Load Growth – Toronto Regional Plan

- **"Official Plan"**, City of Toronto
- **"Secondary Plan Areas"**, City of Toronto
- **"Transform TO Net Zero Strategy"**, City of Toronto
- **"Green Bus Program"**, City of Toronto, Toronto Transit Commission
- **"2030 Emissions Reduction Plan – Canada's Next Steps for Clean Air and a Strong Economy"**, Environment and Climate Change Canada
- **"Electric Vehicle Strategy"**, Report for Action, City of Toronto

# Key Considerations in Toronto Regional Plan

- City of Toronto has specific secondary plans that will lead to substantial pockets of growth within the city, these plans include:
  - The Port Lands redevelopment
  - *Update Downsview Secondary Plan*
  - *Golden Mile Secondary Plan (Scarborough)*
- The regional electricity plan will study options to address the impacts of reducing reliance over the medium to long term on Portland Energy Centre, a 550 MW natural gas plant in the City of Toronto
- Space for new transmission infrastructure into the City is limited and locations of unused rights-of-way may not be in areas that can alleviate future needs

# Developing the Demand Forecast

- Toronto Hydro, the local distribution company, develops the summer and winter gross demand forecasts for each station in the region, this includes:
  - Incorporating municipal climate action plans into their forecast; and
  - Establishing forecasting assumptions based on customer growth plans
- The IESO develops the conservation and demand management (CDM) forecasts based on provincial and federal policies; the IESO and Toronto Hydro develop a forecast of the impact of existing and expected distributed energy resources (DER) in Toronto
- The gross demand forecast is then modified based on the CDM and DER forecast and adjusted to reflect extreme weather conditions

# Forecast Scenarios

Two demand forecast scenarios are being developed for Toronto:

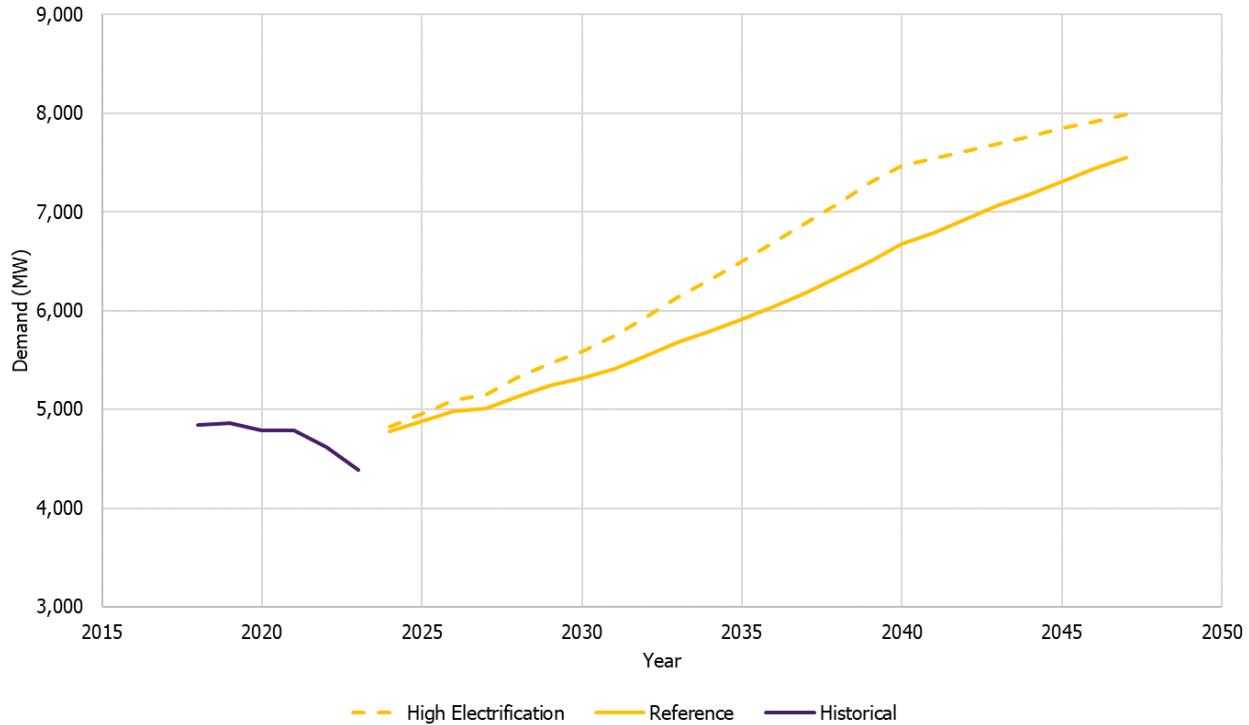
- **Reference:** firm loads (current and planned), organic growth, electrification adoption rates based on current policies
- **High Electrification:** reference plus potential demand growth that is less certain, and assumes the highest electrification adoption rates

Plan recommendations will be driven by the reference demand forecast. The high forecast scenario will be considered to test the robustness of the plan, identify signposts to monitor forecast changes, and contemplate additional actions required if higher demand growth materializes.

# How were the forecasts made?

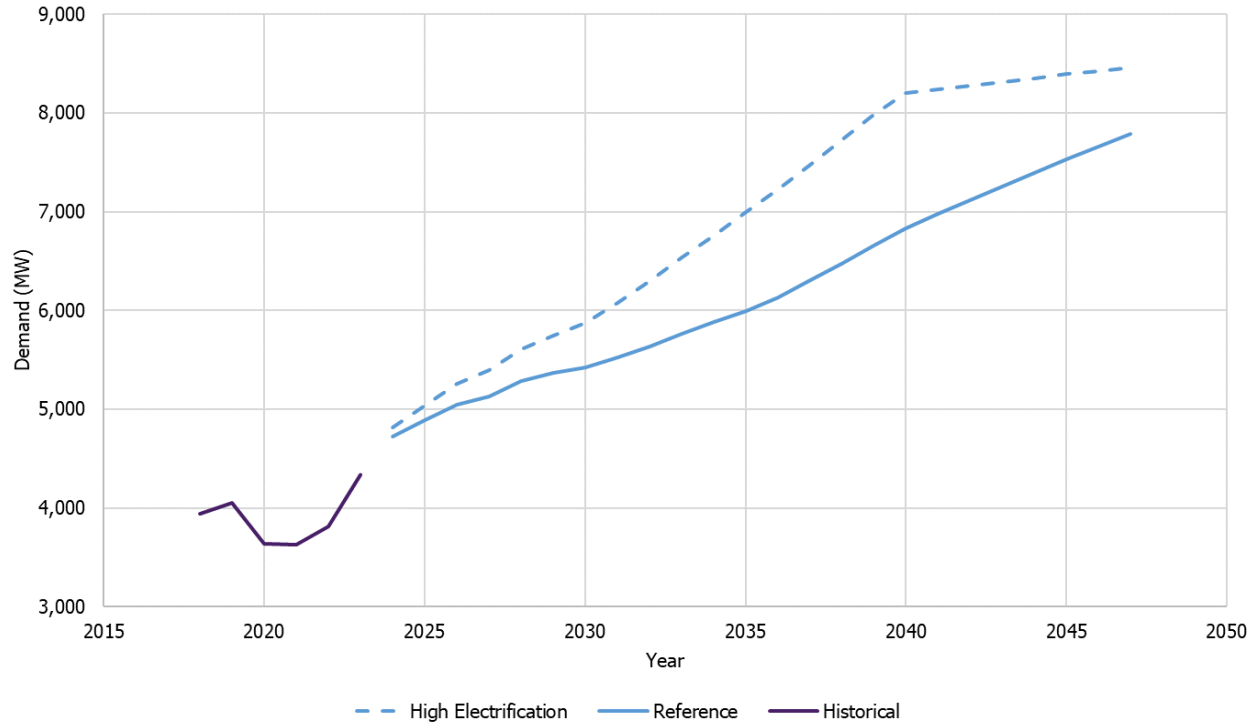
- Probability distributions are applied to certain variables, including electric vehicle load, electrified heating load, and data centre load
- A Monte-Carlo simulation was used to develop a range of forecasts; the median of this range was chosen to produce the Reference Forecast
- In contrast, the High Electrification Forecast considers the highest uptake for the above variables
- More details can be found in the accompanying Forecasting Methodology document

# Draft Summer Toronto Demand Forecasts





# Draft Winter Toronto Demand Forecasts





# Engagement and Next Steps

# Engagement Key Areas for Input

<b>Milestone</b>	<b>Timeline</b>	<b>Community Input</b>
** Electricity demand forecast and Engagement Plan	Current	What economic development or other growth or project plans might influence the regional load forecast? What additional information should be considered?
Electricity needs and potential options	Q2-Q3 2024	What additional information should be considered in the study assumptions? What community feedback is there to the potential solutions? What other options should be considered?
Options analysis and draft recommendations	Q4 2024-Q1 2025	What community feedback is there on the draft recommendations? What information should be considered in the recommendations?
Final IRRP	March 2025	Final report posted

\*\* Current IRRP stage/milestone

# What We Have Heard So Far

- Consideration of broader policies at the federal and provincial level (e.g. Clean Electricity Regulation, Electrification and Energy Transition Panel)
- Desire to understand the supply options being considered in the IRRP process
- Inclusion of a diversified demand forecast scenario that includes both electrification and low-carbon gas
- Increased attention needed on climate adaptation matters
- Leverage relevant City studies, including the Downsview Airport site, the Port Lands, and the Golden Mile Plan, electricity demand studies and distributed energy resource analyses as part of the demand forecasts and non-wires alternatives scenarios in the IRRP

# Ongoing Engagement

**Community and stakeholder input is critical to informing the development of an electricity plan**



**Participate** in targeted discussions and public webinars



**Subscribe** to receive updates on the IESO [website](#) → select Toronto Region



**Follow** the Toronto regional planning activities [online](#)

# We Want to Hear From You

## **Determining the electricity demand forecast for your region**

What additional information, if any, should be incorporated in the proposed scenarios? How can the proposed scenarios best capture the range and uncertainty of growth potential while informing near-term infrastructure investments?

## **Identifying needs to be addressed**

What areas of concern or interest about electricity should be considered as part of the planning process?

## **Engaging with communities and interested parties**

What information is important to provide throughout the engagement? Does the proposed Engagement Plan provide sufficient scope and opportunities for input? What other engagement activities or methods should be considered?

**Please submit your written comments by email to [engagement@ieso.ca](mailto:engagement@ieso.ca) by **May 7, 2024****

# Next Steps

**May 7, 2024** – Written feedback on draft electricity demand forecasts and Engagement Plan due

**Q2-Q3 2024** – Studies will be conducted to determine needs based on the updated forecasts and potential options

**Q4 2024-Q1 2025** – Present option analysis and draft recommendations to meet the needs

**March 2025** – IRRP recommendations and report will be completed

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# Thank You

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